ARCADIAN

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$100 ARCADIAN PROGRAMMING CONTEST As announced in the last issue, we are starting a monthly contest which will provide the winner with $100, courtesy of AstroVision. The basis of the contest will be the judges' decision as to which is the best program in that particular issue. Rules are minimal, and there are practically no restrictions. We do want these programs to be original with the author, so we are asking that you so state with your submission. There will be five judges, and in the beginning the following volunteers will preside: Craig Anderson, Dave Ibach, George Moses, Al Rathmell, and Dick Strauss. One of these will drop out each month as a winner takes his place, and then the monthly winner will replace the most senior judge. In this way, the team of judges will always be rotating, and the winner will be out of circulation for a bit.

A week prior to the date that the ARCADIAN is scheduled for the printer, those programs to be included will be sent to the judges. That day also starts the next cycle of program input for the subsequent issue.

Each judge will grade each program relative to the others on a 1 - 10 basis. These scores will quickly be returned to me and tallied - highest score wins. The winner will be announced in that issue, and a check for $100 sent with his/her copy. Each issue will therefore stand on its own, no carryovers, no delays.

When you submit a program that you would like considered for the contest, please send along a statement "I certify that the program titled '---' is the product of my own efforts and is not a copy of an available program, signed--------"

Programs that are translations, etc., are still needed for the Arcadian, but would not be eligible for the contest.

LATEST NEWS: ASTROVISION BASIC, to be provided free with all new Arcade units (box will read ARCADE PLUS), was approved and sent to be manufactured on April 14. Should be 8-10 weeks for delivery. The data transfer rate has been increased to 2000 baud. The method of transmission has been changed, which is why a standard tape recorder can still be used. We will be able to load our old, 300 baud tapes into the new Basic. Then those programs can be dumped to tape via the new interface jack at 2000 baud. For the "Hackers" out there who want to experiment, we'll have the disassembled listing with comments, for $7 ppd (AstroVision BASIC listing), and also a description of all new commands with comparisons to Bally Basic (20 pages) for $2.50 ppd (AstroVision BASIC Guide). We'll be covering the new commands and features in tutorials in the ARCADIAN, of course.

Obviously, those who seriously wish to continue selling programs will have to provide them in both formats. This leads me to advising you that we will support all versions of the languages used in the Arcade, and we'll have to make some changes in the ARCADIAN to be able to handle everything. At the moment, we'll be indicating which Basic a program is written in by the notations "BB" for Bally Basic, "AB" for AstroVision Basic, and "XB" for Extended Basic.

MOTHERBOARD MODIFICATIONS The following changes are recommended if your machine has any of the listed symptoms. The author, Barry Ellerson, has sent us some "inside information", and can provide a small, built-up addition, ready for installation. Check his ad on p.80

If your unit has these symptoms: Screen Tearing, Loss of Horizontal Sync. on warm-up, Unit goes Dead - or keeps Resetting after warm-up, then the following modifications will correct them. If your unit went completely dead following these symptoms, these modifications will probably repair it.

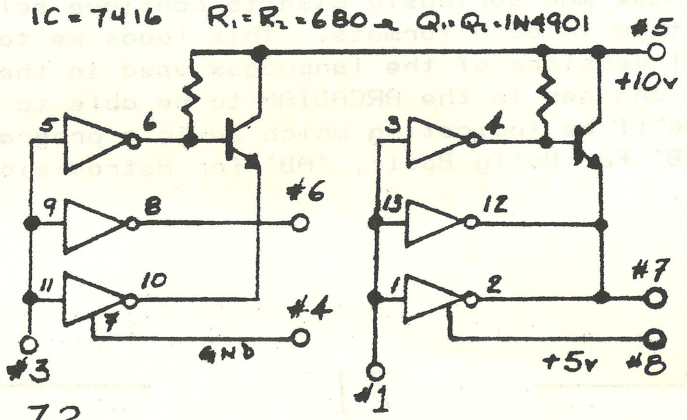
NECESSARY MODIFICATIONS

1. Replace 74LS74 (U-16, Clock) with 74S74.
2. Replace Driver 75361 (U-32, 8-pin,clock) with Kludge board assembly. NOTE: Be sure to heat pins enough to cause solder to flow around double sided foils, as there is no way to see if there is a good connection once the board is in place. Remove crystal - extend leads - cover w/spaghetti or heat shrink tubing - place suitable insulating material over board to prevent crystal from shorting points on top of the board - Lay crystal flat back over top of Kludge board. CAUTION! Use extreme care when removing 75361 driver. If plated through holes are pulled out during removal, repair by pushing thin wire through bottom of board, bend over, and solder to top foil. Then install and solder Kludge assembly. Cut off excess wire on bottom.
3. Remove resistor and capacitor (see diagram), and place jumper where capacitor was. (These units may not exist on your board, or this may have been done by the factory.)
4. Jump 27 ohm resistor R-1 (10v supply, 1w) with a 47 ohm resistor, 1/4 watt or larger.
5. If you have a grey colored data chip (under the keypad), this old style unit which can cause further problems with the clock, DM81LS95, and/or memory should be replaced with a new verson (black color) and properly heat sunk, after cutting a hole in the top shield.
6. Replace 82 ohm resistors in clock (R-12,13) with 47 ohm resistors.

OTHER MODIFICATIONS USEFUL BUT NOT ABSOLUTELY NECESSARY

1. Put in jumper wire from cathode of CR-3 to "+" end of C-6.
2. If C-19 (I/O) is glass, orange and black, replace.
3. Check front edge of key pad and file off any protruding leads.
4. If line filter (in metal box 1"x2") is high resistance type (no tape, or not toroid) replace with new style, low resistance.
5. Put hot melt wax on base of key pad.
6. Replace CR-3 to -6 with schottky 1N5817 or equivalent.

The wiring schematic for the Kludge board follows.



PRECAUTIONS

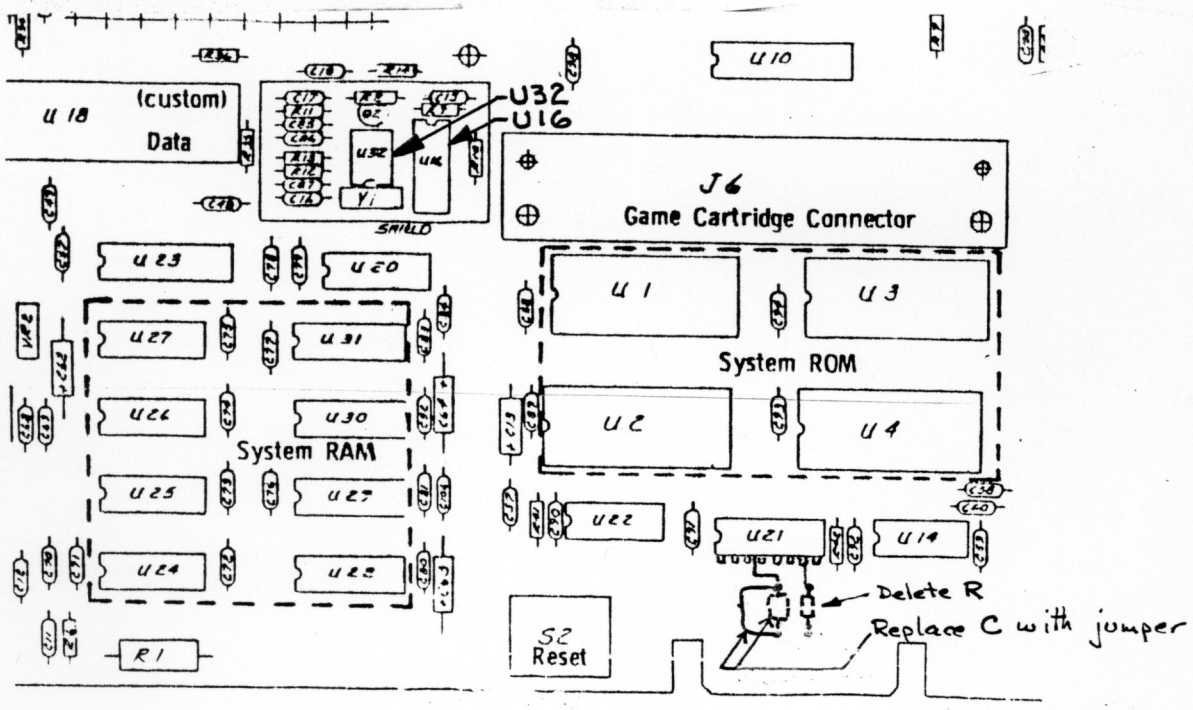
1.Do not wear nylon clothes. Work in a static-free environment, preferably grounded.

2.If the unit is operated outside of its case, short across C-6 before further handling. Inadvertent shorting to other points on board could blow components.

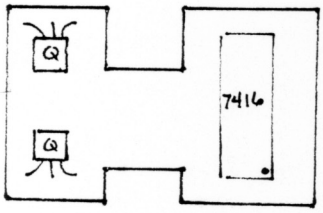
3.Check to be sure metal bushings in bottom shield pan do not short across any foils.

4.Check on-off switch for center lead that extends beyond board edge as it could short to the shield pan.

5.Check 5v. heat sink for good mechanical contact and check clearance of spring clips and board foils.



Full size pc board of Kludge:




```
  3 .
  4 .
  5 .STRAIGHT LINES
  6 .JIM DUNSON 12/78
  7 .
 10 CLEAR ;T=0;NT=0;N=0;FC=BC-1;BC=RND (32)b8;S=RND (20)+10;R=RND (3);C=R
 20 M=X;GOSUB 40;GOSUB 50;N=X;GOSUB 40;GOSUB 50;T=T+1;IF T=SFOR D=1TO 1000;NEXT
D;GOTO 10
 30 GOTO 20
 40 X=RND (14)-7;RETURN
 50 A=Mb9;B=Nb6;IF R=2 C=RND (3)
 60 LINE A,B,C;RETURN
```

ALTERNATIVE ENGINEERING regrets to announce a delay of the VIPER system. However we are glad to announce that the delay is due to the addition of a keyboard interface to the VIPER System One and an additional feature to the 16 K RAM board.

The RAM board will now allow you to load the new Extended Basic 8K tape into the RAM and use the other 8K in which to run programs. Once loaded, you can run either Extended Basic or Bally Basic because they are compatible. You can even load Bally Basic programs while running your Extended Basic and when you execute the old program it will run 4 - 6 times faster.

The System One Interface Card will now include the same VIPER keyboard input port as the System Five. The two systems will be software and hardware compatible. We wish to thank everyone for their continued interest in the VIPER System. Adding these features at this late stage was a hard decision to make but because we want to give you the Extended Basic on tape and a port for a keyboard we think that this delay will be worth it. The revised price of the System One will be $225. only $25 more than it was without the keyboard port, automemory write-protect circuit, or the Extended Basic tape.

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Editorial Notes- After a number of inquiries came in as a result of last month's ad, the Alternative Engineering designers decided that there was enough demand for a keyboard interface at the System One level. In addition, they had to ensure that if the Extended Basic was loaded into half of the available memory, that there was no chance of it's being lost while a program was being set up or run in the other half. The System One card requires two additional chips to do this, and the rework to the printed circuit board is causing a delay of 4 to 6 weeks. The prototype has been operating, and Bally Basic programs have been loaded into Extended Basic and since screen memory is no longer utilized, the programs operate much faster. The Introductory Prices, stated on page 61, are still in effect except for System One, which is now $225 (and includes the Extended Basic).

SUB HUNT - YOU COMMAND THE DESTROYER IN AN ATTEMPT TO LOCATE AND DESTROY THE ENEMY SUBMARINE FLEET. FIRST, YOU WILL BE ASKED WHAT THE WINNING SCORE SHOULD BE. ENTER THIS THROUGH THE KEYBOARD. THIS IS A ONE PLAYER GAME AGAINST THE COMPUTER. A COMPUTER SUB IS SUBMERGED SOMEWHERE ON THE GRID. ON EACH TURN HE WILL EITHER MOVE OR FIRE TORPEDOES. IF HE FIRES, HE MUST REVEAL HIS LOCATION. YOU USE THE JOYSTICK TO CONTROL YOUR MOVEMENT, UP, DOWN, RIGHT, LEFT, OR DIAGONAL. AFTER YOU TWEEK THE TOP, A LOUD BEEP IS HEARD. NOW COUNT "ONE SUBMARINE, TWO SUBMARINES, ETC" UNTIL A SOFTER BEEP IS HEARD. THIS REPRESENTS THE DISTANCE TO THE SUBMARINE. SONAR!! NOW YOUR CREW FIRES DEPTH CHARGES INTO THE TWO SQUARES IN FRONT OF YOU. MOVE AGAIN. GOOD LUCK.

```
   1 .
   2 .
   3 .
   4 .
   5 . SUB HUNTER
   6 . BY BOB WISEMAN
  10 CLEAR ;GOSUB 9000
  20 GOSUB 1000;GOSUB 2000
  30 GOTO 20
1000 U=C;V=D
1010 L=JX(1);M=JY(1);N=TR(1)
1020 IF L=0IF M=0IF N=0GOTO 1010
1040 NT=30
1045 H=ABS(D-F)+ABS(C-E)
1050 MU="Q";FOR I=1TO 500bH;NEXT I
1060 NT=4;MU="Q";NT=0
1070 FOR I=1TO 400;NEXT I
1100 IF (C+L<1)+(C+L>7)+(D+M<1)+(D+M>5)GOTO 1800
1110 C=C+L;D=D+M
1120 X=C;Y=D;GOSUB 8300
1130 X=X+L;Y=Y+M
1140 IF (X<1)+(X>7)+(Y<1)+(Y>5)GOTO 1200
1150 GOSUB 8300
1200 X=U;Y=V;GOSUB 8200
1210 GOSUB 8000;GOTO 1990
1800 NT=10;MU="$";MU="%";NT=0;GOTO 1010
1990 RETURN
2000 IF RND (10)>7GOTO 2500
2010 L=RND (3)-2;M=RND (3)-2
2015 IF L=0IF M=0GOTO 2010
2020 X=E+L;Y=F+M
2030 IF (X<1)+(X>7)+(Y<1)+(Y>5)GOTO 2010
2040 E=X;F=Y;GOTO 2990
2500 H=7;I=1
2510 IF C<E H=1;I=-1
2520 Y=F
2530 FOR X=ETO HSTEP I
2540 GOSUB 8700;NEXT X
2990 NT=100;MU=99;NT=0
3000 RETURN
8000 CX=10bC-40
8010 CY=10bD-30
8015 PRINT "a",;RETURN
8200 GOSUB 8900;PRINT " ",;RETURN
8300 GOSUB 8950
8340 IF X=EIF Y=FGOTO 8400
8350 GOTO 8690
8400 S=1;GOSUB 9500
8410 E=RND (7);F=RND (5)
8690 GOSUB 8200;RETURN
8700 GOSUB 8900
8705 &(23)=50
8710 &(21)=50;&(20)=255;NT=1
8720 IF X=CIF Y=DGOTO 8800
8730 PRINT ":",;&(21)=0
8731 NT=0
8735 &(23)=200;&(20)=0
8740 GOSUB 8200;GOTO 8890
8800 NT=0;&(23)=200;&(20)=0;&(21)=0
8805 GOSUB 8950
8810 T=1;GOSUB 9500
8820 GOSUB 8200;C=1;D=3
8830 GOSUB 8000
8840 X=H+I
8890 RETURN
8900 CX=10bX-40
8910 CY=10bY-30
8920 RETURN
8950 &(21)=255;GOSUB 8900
8960 PRINT "*",;&(21)=0
8990 RETURN
9000 NT=0;PRINT ;PRINT ;PRINT "SUB HUNTER";PRINT
9005 &(23)=200
9010 INPUT "ENTER # OF GAMES"G
9020 CLEAR ;FC=134;BC=169
9025 A=0;B=0;S=0;T=0
9030 FOR X=-25TO 25STEP 10
9040 BOX 0,X,71,1,1;NEXT X
9050 FOR X=-35TO 35STEP 10
9060 BOX X,0,1,51,1;NEXT X
9070 C=1;D=3;E=7;F=3
9080 GOSUB 8000
9100 RETURN
9500 CX=-75;CY=-40
9510 IF SPRINT "GOOD SHOT    ",
9520 IF TPRINT "YOU ARE SUNK",
9530 CX=-75;CY=40
9540 A=A+S;B=B+T;S=0;T=0
9550 PRINT "SHIP=",#2,A," SUB=",#2,B,
9552 CX=-75;CY=-40
9554 FOR N=1TO 1000;NEXT N
9556 PRINT "                ",
9560 IF A<GIF B<GRETURN
9600 CX=-75;CY=-40
9610 IF A=GPRINT "GOOD JOB CAPTAIN",
9620 IF B=GPRINT "YOU ARE DESTROYED",
9630 STOP
```

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```
  1 :RETURN ;E=9000;F=1000;H=2000;I=7000;J=5000;L=3000;O=8000;P=4000
 10 CLEAR ;BC=RND (256);FC=BC+4;S=4;B=32767;W=60;GOSUB 10000;CLEAR ;GOSUB F;Q=3
0;A=0;GOSUB H;V=A
 15 CY=40;PRINT "POPULATION= ",#1,A,",000
 20 R=0;W=W-20;IF A<99CY=-25;PRINT "YOU LOSE!";GOTO I
 30 PRINT "YOU HAVE ",#1,Q," MISSILES";PRINT "ENEMY HAS ",#1,Sb5," MISSILES";B=
A;FOR Z=1TO H;NEXT Z
 35 IF S=0IF V-B<100CY=-25;PRINT "YOU WIN";GOTO I
 40 IF S=0CY=-25;PRINT "YOU LOSE!";GOTO I
 50 BOX 0,10,160,67,2;PRINT "****** ENEMY ATTACK ******";&(16)=49;&(17)=243;&(1
8)=244;&(19)=245;&(21)=15;NT=0
 60 &(22)=255;&(23)=10;FOR Z=1TO H;NEXT Z;BOX 0,10,160,67,2;GOSUB L;Y=W;FOR Z=1
TO 5;BOX @(Z),Y,1,3,3;NEXT Z
 65 Y=Y-1;&(16)=Y+74;FOR Z=1TO 5;IF @(Z)=0GOTO 100
 70 IF PX(@(Z),Y-1)NT=0;GOSUB O
 80 IF PX(@(Z),Y)=0@(Z)=0;GOTO 100
 90 BOX @(Z),Y-1,1,1,1;BOX @(Z),Y+2,1,1,2
100 NEXT Z;IF Y<-38GOSUB P;GOTO 140
110 IF TR(1)IF R=0IF Q>0Q=Q-5;R=1;GOSUB P;N=-30;FOR M=6TO 10;BOX @(M),N,1,3,3;N
EXT M
120 IF R=1GOSUB J
130 GOTO 65
140 A=0;GOSUB H;IF B-A=0CY=0;PRINT "NO LOSSES";GOTO 160
150 CY=0;PRINT #1,B-A,",000 KILLED
160 S=S-1;GOTO 15
1000 BOX 0,-42,160,3,1;FOR G=-80TO 79STEP 3;BOX G,-38,RND (5),3+RND (6),1;FOR N=
1TO 2
1010 BOX G,-32-RND (9),1,RND (2),2;NEXT N;NEXT G;RETURN
2000 GOSUB E;BOX 0,5,160,75,2;CY=40;PRINT "COUNTING POPULATION
2010 FOR Y=-37TO -34;FOR X=-80TO 79;IF PX(X,Y)A=A+1
2020 MU=A;NEXT X;NEXT Y;IF A>B A=B
2030 NT=0;RETURN
3000 FOR Z=1TO 5
3010 A=RND (150)-75;FOR C=1TO 5;IF (@(C)=A)+(A=0)GOTO 3010
3020 NEXT C;@(Z)=A;NEXT Z;RETURN
4000 FOR Z=6TO 10
4010 A=RND (150)-75;FOR C=6TO 10;IF @(C)=AGOTO 4010
4020 NEXT C;@(Z)=A;NEXT Z;RETURN
5000 N=N+1;FOR M=6TO 10;IF PX(@(M),N)=0GOTO 5030
5005 IF JX(1)BOX @(M),N-1,1,3,3;@(M)=@(M)+JX(1);BOX @(M),N-1,1,3,3
5010 BOX @(M),N+1,1,1,1;BOX @(M),N-2,1,1,2
5020 IF N>=Y&(21)=255;&(16)=1;BOX @(M),N,9,9,1;BOX @(M),N,9,9,2;FOR D=1TO 500;NE
XT D;&(16)=Y+74
5030 IF N>Y+1R=0
5040 NEXT M;&(21)=15;RETURN
7000 CY=40;PRINT "ORIGINAL POP. = ",#1,V,",000
7010 PRINT "TOTAL LOSS =     ",#1,V-A,",000";PRINT "PRESS ANY KEY TO PLAY     AGA
IN";IF KPRUN
8000 &(21)=255;&(16)=0;FOR D=1TO 7
8010 BOX @(Z),Y,D,D,1;NEXT D;BOX @(Z),Y,9,9,2;FOR D=1TO F;NEXT D
8015 IF Y>-37&(22)=15;RETURN
9000 &(21)=0;&(22)=0;&(23)=0;NT=1;RETURN
10000 PRINT " STRATEGIC AIR COMMAND";PRINT ;PRINT "IF LOSS OF LIVES FROM";PRINT
"ATTACK EXCEEDS 100,000,
10010 PRINT "YOU LOSE! TO DEFEND GOTO  TR(1)&(KN(1)";FOR Z=1TO L;NEXT Z;NT=1;RET
URN
```

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```
  1 .
  2 .
  3 .CIRCLES
  5 .BY RON PICARDI
 10 CLEAR
 20 PRINT ;PRINT ;PRINT
 30 PRINT "       ALL CIRCLES"
 40 PRINT
 50 PRINT "      POP   ART"
 60 GOSUB 1000
 65 FC=BC
 66 BC=15
 70 FOR A=1TO 150
 80 X=X+1
 90 GOSUB 1100
100 NEXT A
105 GOSUB 1000
110 FOR A=1TO 75
120 X=X+2
130 GOSUB 1100
140 NEXT A
150 GOSUB 1000
160 FOR A=1TO 50
170 X=X+3
180 GOSUB 1100
190 NEXT A
200 GOSUB 1000
210 FOR A=1TO 25
220 X=X+6
230 GOSUB 1100
240 NEXT A
250 FOR A=1TO 500
260 NEXT A
270 GOSUB 1200
280 FOR A=1TO 80
290 Y=Y+1
300 GOSUB 1300
310 NEXT A
320 GOSUB 1200
330 FOR A=1TO 40
340 Y=Y+2
350 GOSUB 1300
360 NEXT A
370 GOSUB 1200
380 FOR A=1TO 20
390 Y=Y+3
400 GOSUB 1300
410 NEXT A
440 GOSUB 1000
450 Y=3;C=2
460 GOSUB 1400
470 GOSUB 1500
480 Y=6;C=3
490 GOSUB 1400
500 GOSUB 1500
510 Y=10;C=4
520 GOSUB 1400
530 GOSUB 1500
540 Y=15;C=5
550 GOSUB 1400
560 GOSUB 1500
570 Y=21;C=6
580 GOSUB 1400
590 GOSUB 1500
600 Y=28;C=7
610 GOSUB 1400
620 GOSUB 1500
630 Y=36;C=8
640 GOSUB 1400
650 GOSUB 1500
655 Y=36;C=8
656 X=0;B=0
660 FOR A=1TO 40
670 LINE 0,0,0
680 IF X>0C=C-1
690 IF X<0C=C+1
700 IF Y>0B=B-1
705 X=X+C
710 IF Y<0B=B+1
715 Y=Y+B
720 LINE X,Y,1
730 &(17)=Xb3;&(18)=Yb3
740 NEXT A
750 GOSUB 1500
760 CLEAR ;&(22)=255
770 X=0;Y=32;B=0;C=10
780 FOR A=1TO 370
790 IF X>0C=C-1
800 IF X<0C=C+1
810 IF Y>0B=B-1
820 IF Y<0B=B+1
830 X=X+C;Y=Y+B
840 BOX X,Y,2,2,1
850 &(17)=Xb3;&(18)=Yb3
860 NEXT A
870 GOTO 2000
1000 FOR A=1TO 500
1001 NEXT A
1002 CLEAR
1003 &(22)=255
1010 X=-75;C=8;Y=0
1015 &(22)=255
1020 LINE -75,0,0
1025 FC=RND (32)b8-2;BC=RND (32)b8+2
1030 RETURN
1100 &(17)=Y;&(18)=-Y
1110 IF Y>0C=C-1
1120 IF Y<0C=C+1
1130 Y=Y+C
1140 LINE X,Y,0;LINE -X,-Y,1
1150 RETURN
1200 FOR A=1TO 500
1201 NEXT A
1202 CLEAR
1203 &(22)=255
1210 X=0;Y=-40;C=10
1220 FC=RND (32)b8-2;BC=RND (32)b8+2
1225 LINE X,Y,0
1230 RETURN
1300 &(17)=X;&(18)=-X
1310 IF X>0C=C-1
1320 IF X<0C=C+1
1330 X=X+C
1340 LINE X,Y,0;LINE -X,-Y,1
1350 RETURN
1400 X=0;B=0
1405 LINE X,Y,0
1410 FOR A=1TO 40
1420 IF X>0C=C-1
1430 IF X<0C=C+1
1440 IF Y>0B=B-1
1450 IF Y<0B=B+1
1460 X=X+C;Y=Y+B
1470 &(17)=Xb2;&(18)=Yb2
1480 LINE X, Y,1
1490 NEXT A
1495 RETURN
1500 FOR A=1TO 500
1510 NEXT A
1520 FC=RND (32)b8-2;BC=RND (32)b8+2
1530 RETURN
2000 PRINT "     POP ART"
2002 NT=3
```

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MEMORY MAP - AstroVision Basic: As of the date of printing, the various allocations of memory space in the available 4K are as indicated below. We printed a similar map for the original Bally Basic in Vol 1, p.34, and areas obviously different are indicated by an asterisk (*).

On Board ROM Area	0 - 8191	0 - 1FFF
BASIC ROM Area	8192 - 12287	2000 - 2FFF
Screen Memory Area	16384 - 20479	4000 - 4FFF
Graphics/Program Area	16384 - 19983	4000 - 4E10
Scratchpad Area	20000 - 20463	4E20 - 4FEF
*Variables start at	20002	4E22
*Stack Area	20258 - 20415	4F22 - 4FBF
*Line Input Buffer	20154 - 20257	4EBA - 4F21
Text Array Area	-24576 to -22777	A000 - A70C

MACHINE CODE MYSTERY We've had very few machine code programs for you, and I believe part of the problem has been the awkward entry of values. The following program by Al Rathmell makes the machine do all the work of swapping pairs of hex code, converting them to decimal, and POKEing them into memory slots.

```
  1.  HEX POKER
  2.  BY AL RATHMELL
 10 CLEAR; INPUT "START ADDRESS = " B
 20 PRINT #2, B, "=",
 30 FOR A = 1 TO 2; K = KP; TV = K; IF K = 112  TV = 13; STOP
 40 GOSUB 90
 50 IF A = 1  J = K x 16
 60 IF A = 2  K = J + K
 70 NEXT A; %(B) = K; B = B + 1
 80 PRINT #6, K; GOTO 20
 90 IF (K < 48) + (K > 70) GOTO 20
100 IF K > 57  IF K < 65 GOTO 20
110 K = K - 48; IF K > 9 K = K - 7
120 RETURN
```

This program was typed directly, and therefore the small 'x' means to "multiply".

The HEX POKER program is a small utility routine that will store hexadecimal Z80 Opcodes into memory one byte at a time. The starting address is entered in decimal (such as using 20180, the Bally Basic line buffer starting location - note that it is 20154 in the AstroVision Basic - rf). This is identified as variable "B". As each memory location is listed on the screen by this program, enter a two-digit hex code from the keypad. After the last byte, key in WORDS RETURN. To run the machine code routine, enter CALL B where "B" was the starting address. . .

Al Rathmell, 1643 Swallow Dr., Sunnyvale, CA 94087

EXTENDED BASIC We expect to make this new language available in two versions: on tape, for those of you who will have a lot of added memory; and on a ROM for those of you with a small added memory. To explain: The Extended Basic resides in 8K bytes. If you have lots of memory available to you, then you can afford to allocate 8K of that memory exclusively for the storage of the Basic, and use the rest of your memory for inventing a program that utilizes that Basic. If you had 24K of memory, for example, 8K would be language, and 16K could be program. You would have to load the Basic every time you wanted to use it. It is the cheaper way to obtain the Basic.

If you have a limited amount of memory, then you want to keep as much of it available for writing programs. That person can purchase the Basic permanently located in a ROM chip, exactly as the Bally Basic is now. It would be inside a cartridge and would fit into the existing receptacle just like the Bally Basic does. The language will be the same and programs will run equally well in either memory system (as long as the program fits).

Here is a list of most of the new commands and features that will appear in the Extended Basic:

POINT and CIRCLE

SNAP memorizes what is on the screen and stores it in an array. Later you can recall the scene using SHOW

NEW erases the program

DEFAULT sets all variables to their original values.

ZERO sets all variables to zero.

DATA allows easier entry of variables

SCROLL rolls the text up or down a specified number of lines

Commands can be shortened (P. means PRINT)

Conversion is available between decimal and hex and binary

Four colors anywhere

Additional character font size of 3x5

A window can be set up of any size, anywhere, within which text can be placed and scrolled.

UNUSUAL SOUNDS The following program was sent by Bill Loos, which, along with the list of variables, will provide some unusual sound effects. Make direct substitutions of the values of X and Y as recommended, either individually, or by grouping two or more together.

```
10  INPUT X; INPUT Y; &(21)=15
20  FOR A=X TO Y
30  &(19) = A; &(18) = A
40  &(20) = ABS(2xA); NEXT A
50  FOR B = 0 TO 500; NEXT B
60  &(18) = 0; &(19) = 0; &(20) = 0
70  GOTO 10
```

```
X = -255   Y = -224
      X = -223   Y = -192
        X = -191   Y = -160
     X = -159   Y = -128
  X = -127   Y =  -96
        X =  -95   Y =  -64
    X =  -63   Y =  -32
       X =  -31   Y =   -1
```

Bill Loos, 8599 Framewood Dr. Newburgh, IN 47630

ADS:

PROGRAM TAPE #3

SIDE 1 MAZE RACE & OBSTACLE COURSE - BOTH GAMES ARE LOADED AT THE SAME TIME:
MAZE RACE IS A TWO PLAYER GAME REQUIRING EACH PLAYER TO RACE THROUGH A MAZE WITHOUT TOUCHING A WALL. IF YOU TOUCH A WALL YOU LOOSE POINTS PLUS BLOW A HOLE IN IT WHICH YOUR OPPONENT CAN USE TO HIS ADVANTAGE.

OBSTACLE COURSE IS PROBABLY OUR MOST POPULAR GAME SO FAR. IT REQUIRES A GREAT DEAL OF PRACTICE TO DEVELOP THE SKILL TO GUIDE A BALL THROUGH A COURSE. AFTER YOU COMPLETE THE COURSE THE FIRST TIME THE NEXT TIME GETS TOUGHER. THERE ARE SEVEN LEVELS PER GAME SET AND SEVEN GAMES PER SET. STARTING AT THE LEVEL ONE AND INCREASING EACH GAME. SO FAR NOBODY HAS MADE IT THROUGH ALL SEVEN LEVELS. BUT IF YOU DO, YOU CAN TRY THE INTERMEDIATE LEVELS OR PRO LEVELS. BEST OF LUCK YOU'LL NEED IT.

SIDE 2 SPACE CHASE - USES FEW GRAPHICS, BUT GOOD SOUND EFFECTS AS YOU TRY TO GUIDE YOUR SHIP THROUGH 200 LIGHT YEARS TO YOUR DESTINATION. YOU MAY BE ATTACKED BY ENEMY SHIPS, RUN OUT OF FUEL,COLLIDE WITH METEORS, ETC. YOUR AT THE CONTROLS. WARP 1, WARP 2, WAIT FOR HELP,FIRE PHAZER OR EVASIVE ACTIONS, ITS A LONG WAY TO GO BUT A GOOD CAPTAIN CAN MAKE IT WITH A LITTLE HELP FROM FRIENDLY ALIEN.

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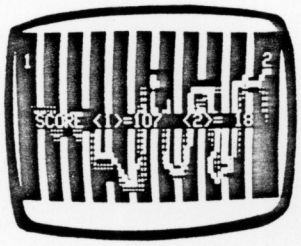
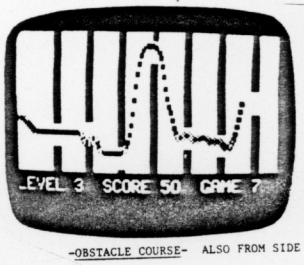


SIDE 1 -MAZE RACE-

Tape 3.



-OBSTACLE COURSE- ALSO FROM SIDE 1

Complete modification kit for your Arcade - $8.00; Assembled and tested Kludge, $10. (extra parts needed included with both) Add $25 for new Data Chip - add $1 for postage and handling. Barry Ellerson 5017 River Rd., Schiller Park, IL 60176

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